

FIG. 1

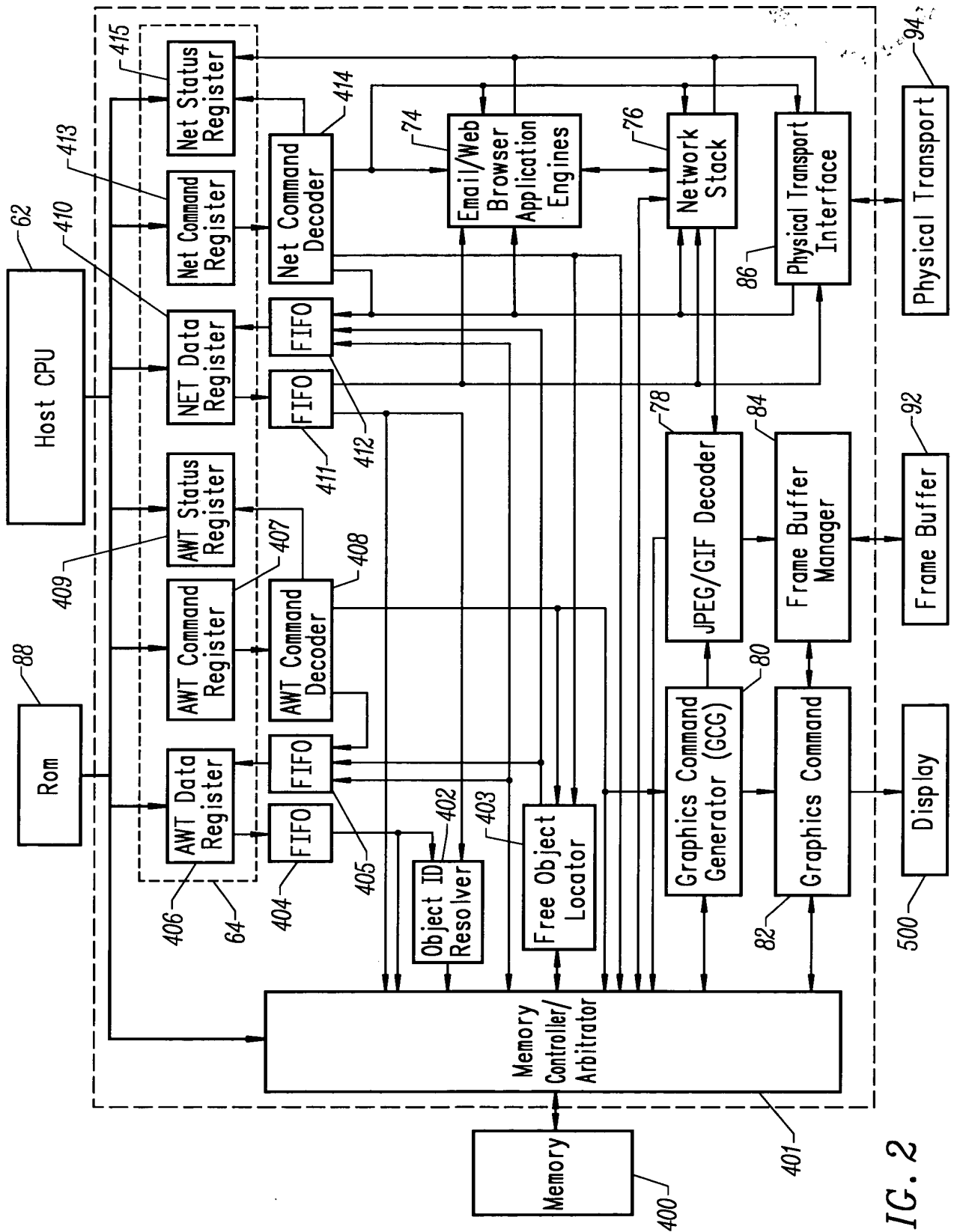


FIG. 2

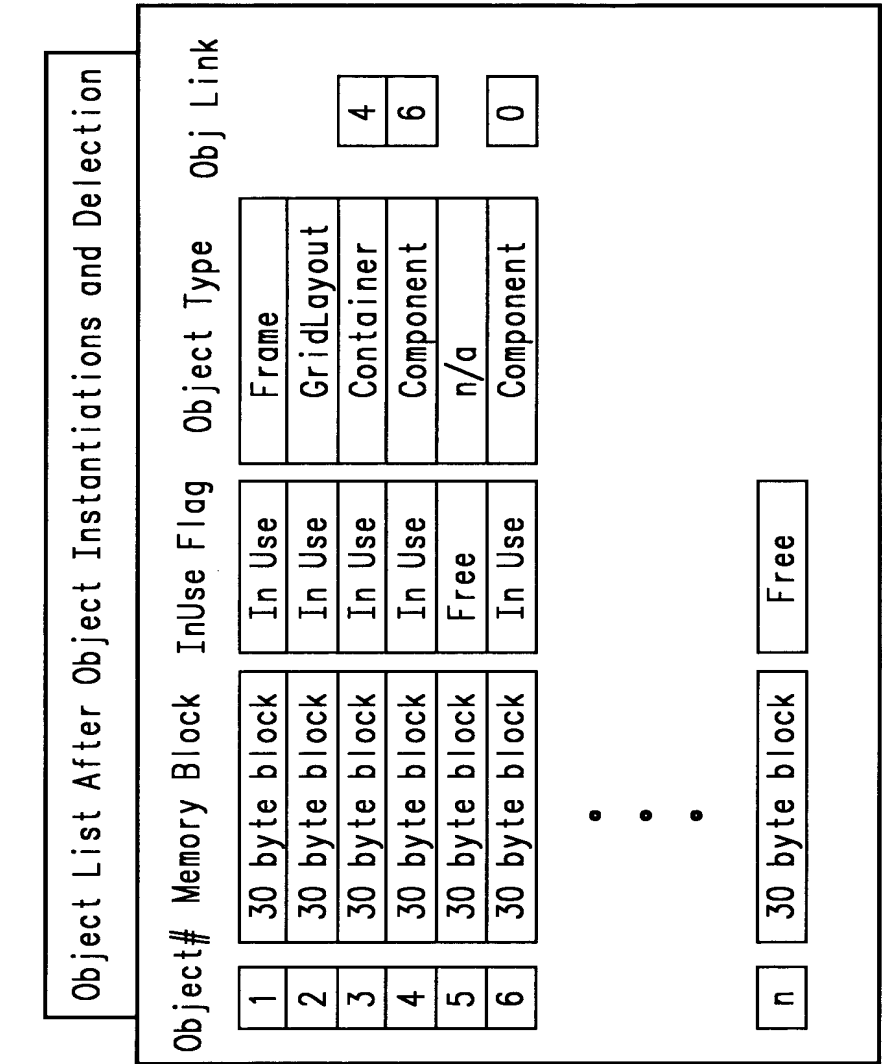


FIG. 3

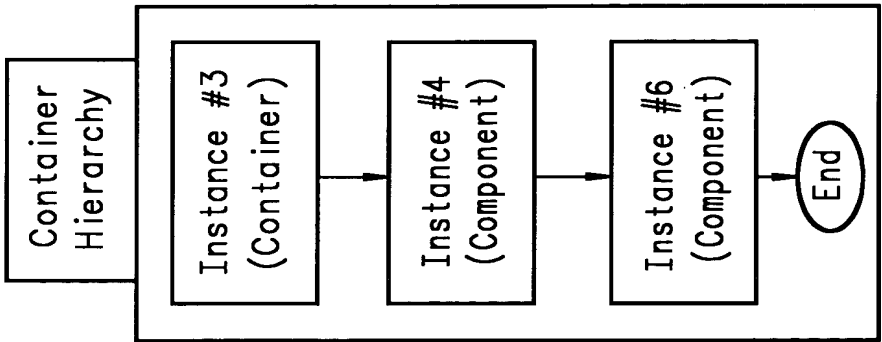


FIG. 4

# Active Object List

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FIG. 5

30 byte block
30 byte block
30 byte block
30 byte block
30 byte block
30 byte block
30 byte block
30 byte block
⋮
30 byte block

Frame
BorderLayout
Component
Container

## BorderLayout Instance contains...

inUse Flag Framework Type Object Type Method Type	Horizontal and Vertical Gaps to be left between drawn components
Reference to Container Instance	References to North, South, West and East Components

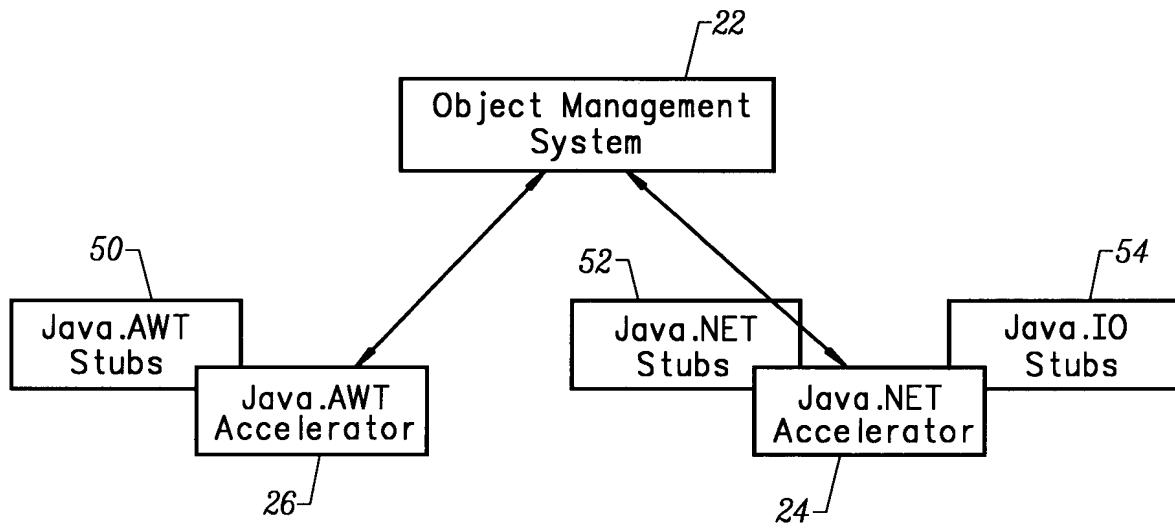
## Container Instance contains...

inUse Flag Framework Type Object Type Method Type	Number of enclosed Components
Inset values with respect to window	
Reference to font Manager instance	Reference to inherited Component instance
Type of Layout Mgr	Reference to first instance of Component in linked list of Components
Resize flag	
Reference to MenuBar Instance	Cursor to draw over Container

## Component Instance contains...

inUse Flag Framework Type Object Type Method Type	x,y,width,height
"Peer" Object Type	Reference to container/parent instance
Reference to font instance	Cursor drawn over Component
Foreground Color Background Color	String Object containing label dis- played in Component
Link to next Component in Container obj	

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*FIG. 6*

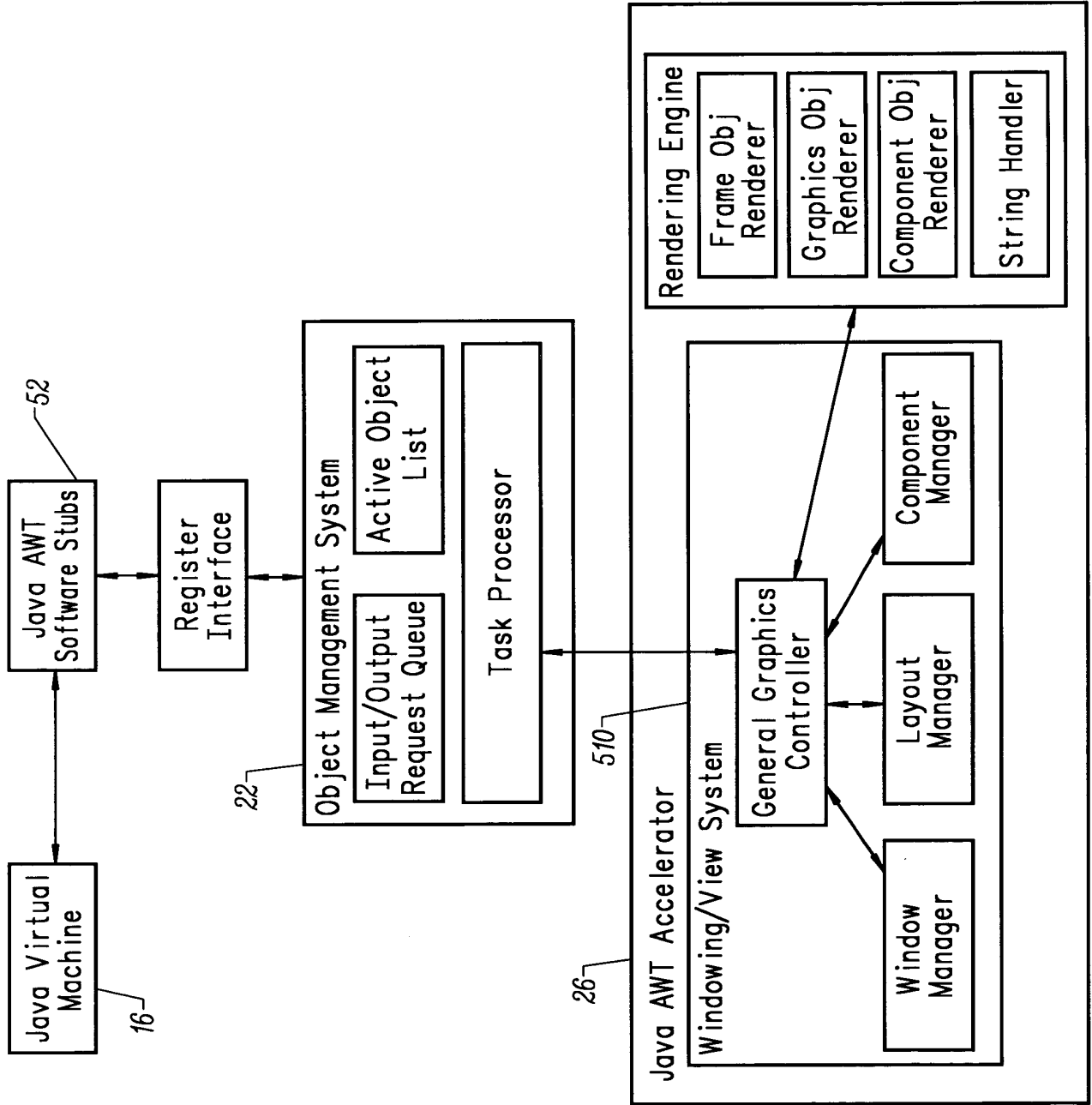


FIG. 7

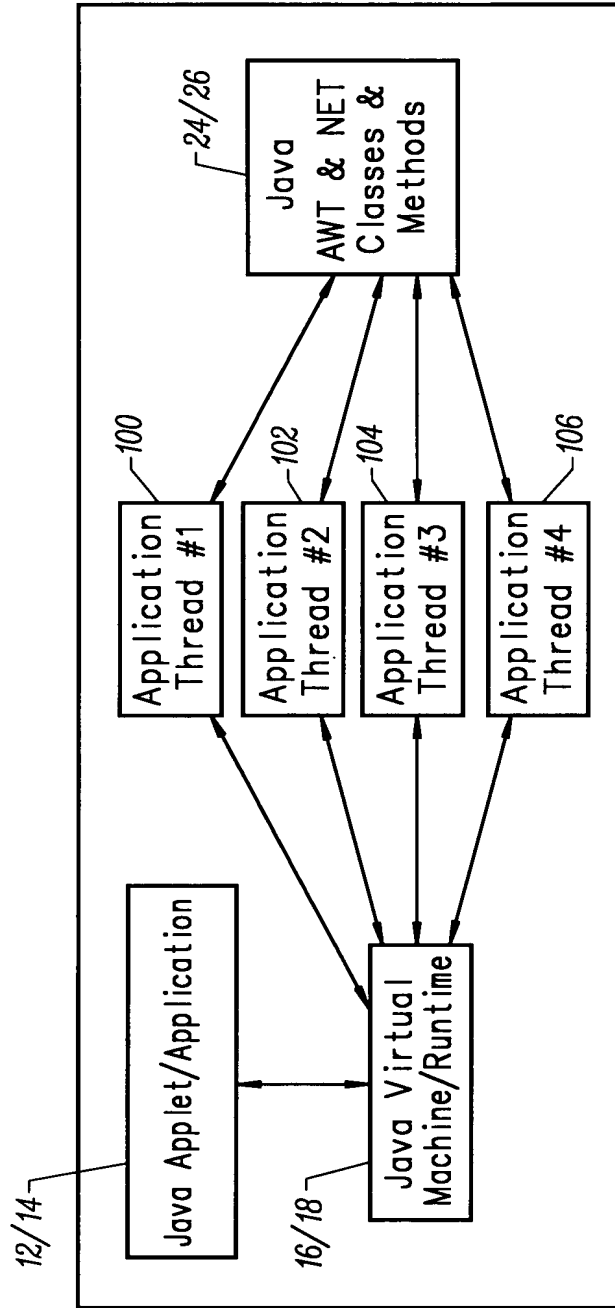


FIG. 8

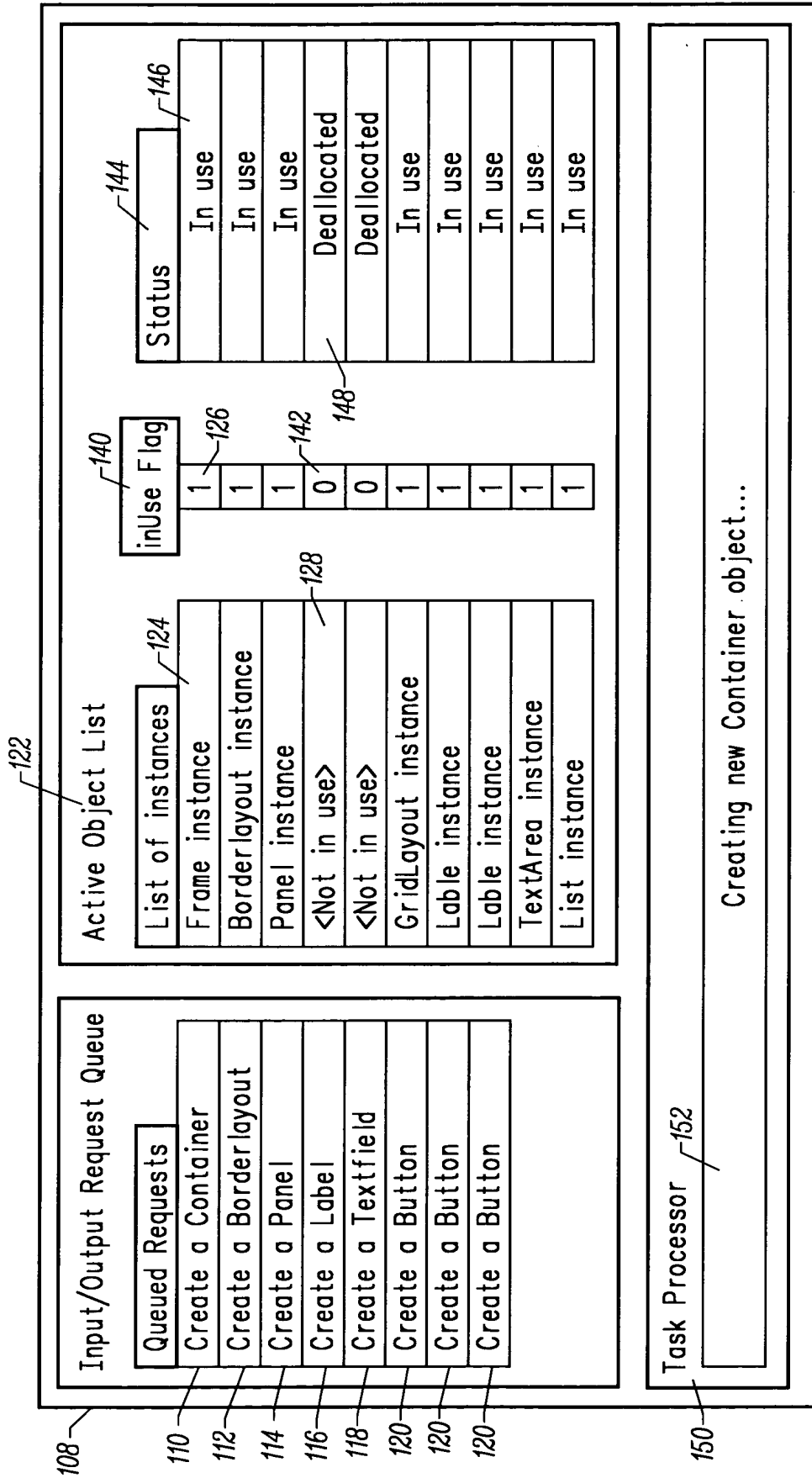
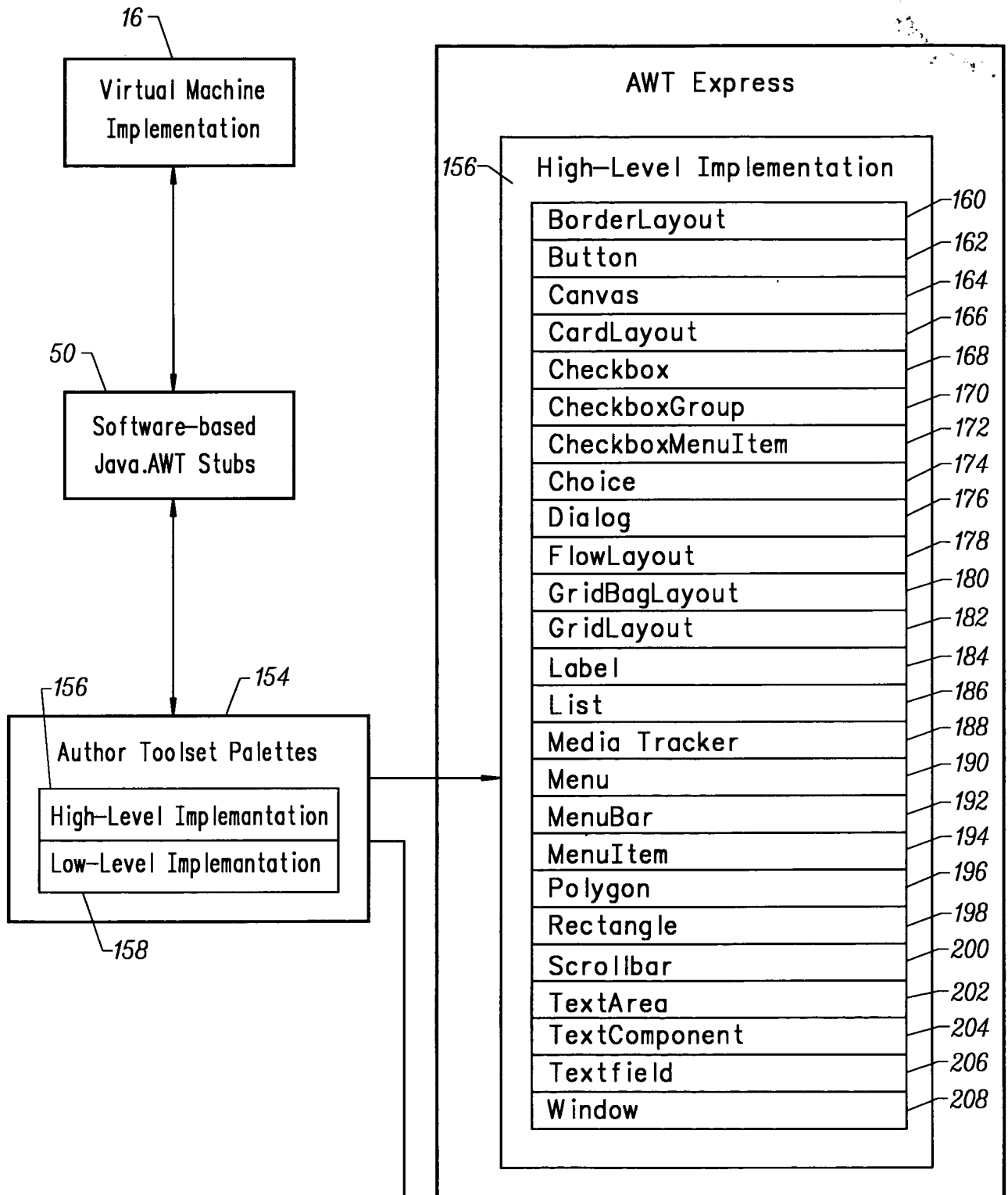


FIG. 9





See FIG. 10B

FIG. 10A

See FIG. 10A

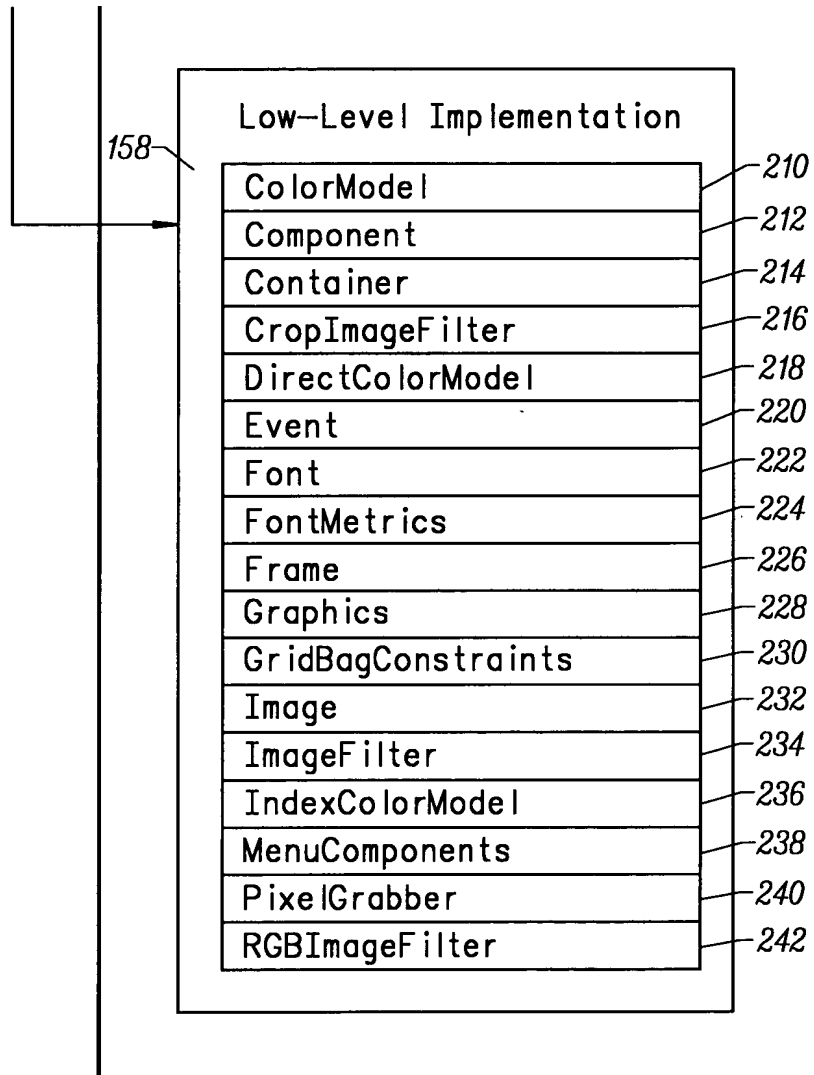


FIG. 10B

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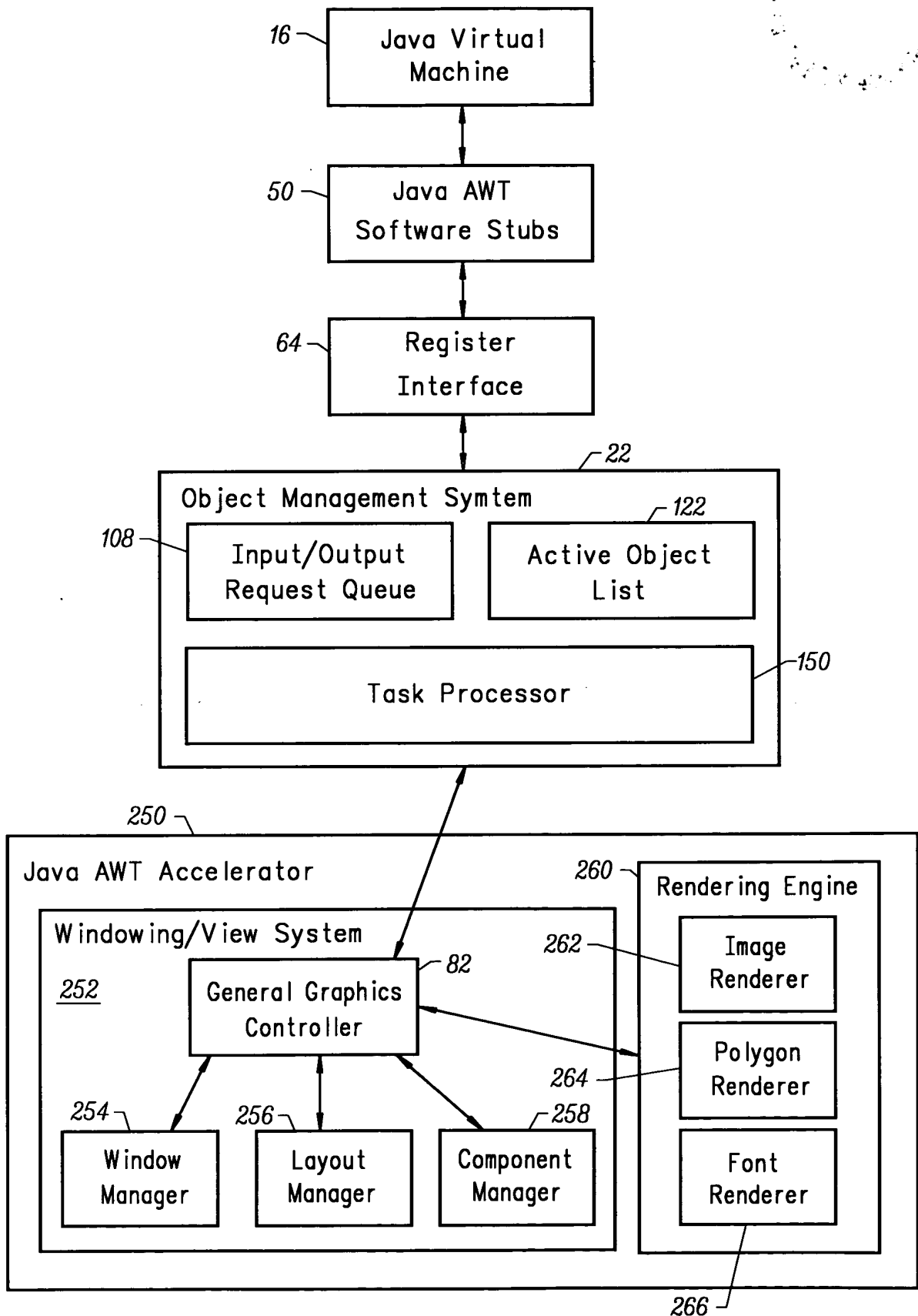


FIG. 11

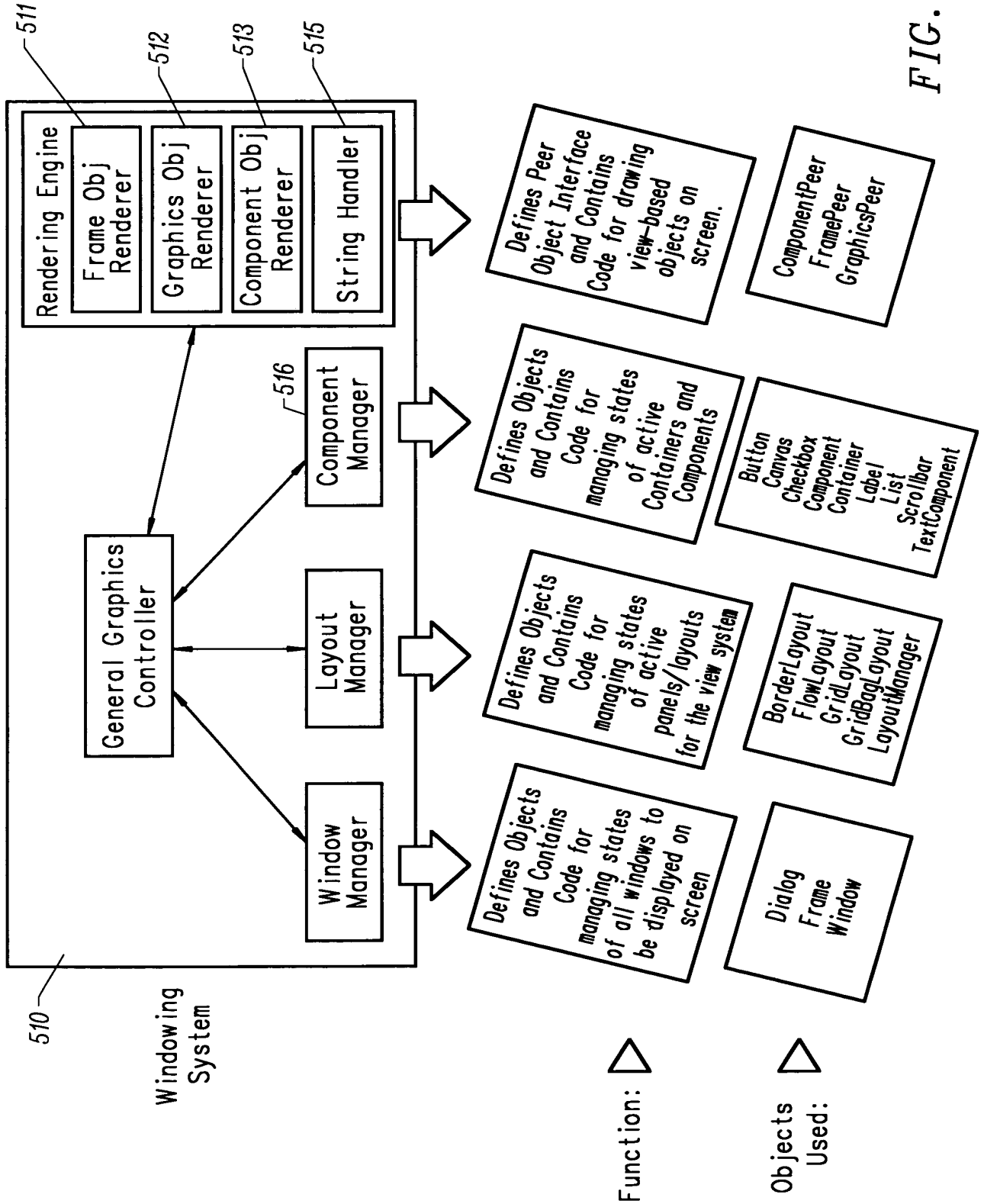
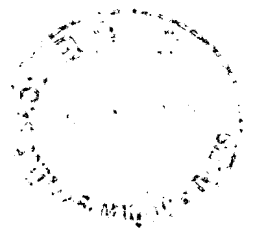


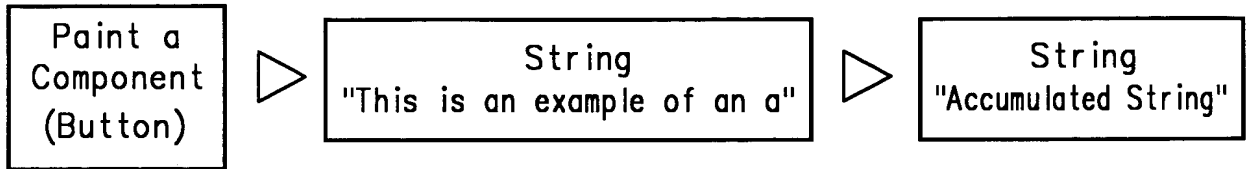
FIG. 12

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*FIG. 13*



The commands:



The result:

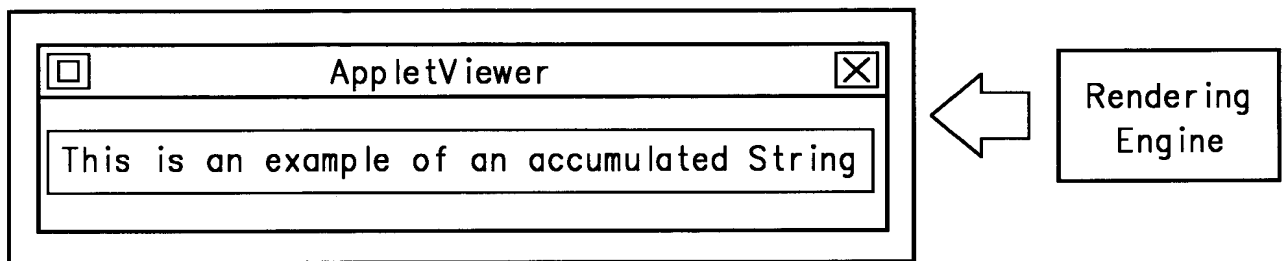


FIG. 14

Painting Methods:

clearRect
clipRect
copyArea
draw3DRect
drawArc
drawLine
drawOval
drawPolygon

Other Methods:

drawRect
drawRoundRect
fill3DRect
fillArc
fillOval
fillPolygon
fillRect
fillRoundRect

drawImage
drawString
setColor

setFont
setPaintMode
translate

FIG. 15

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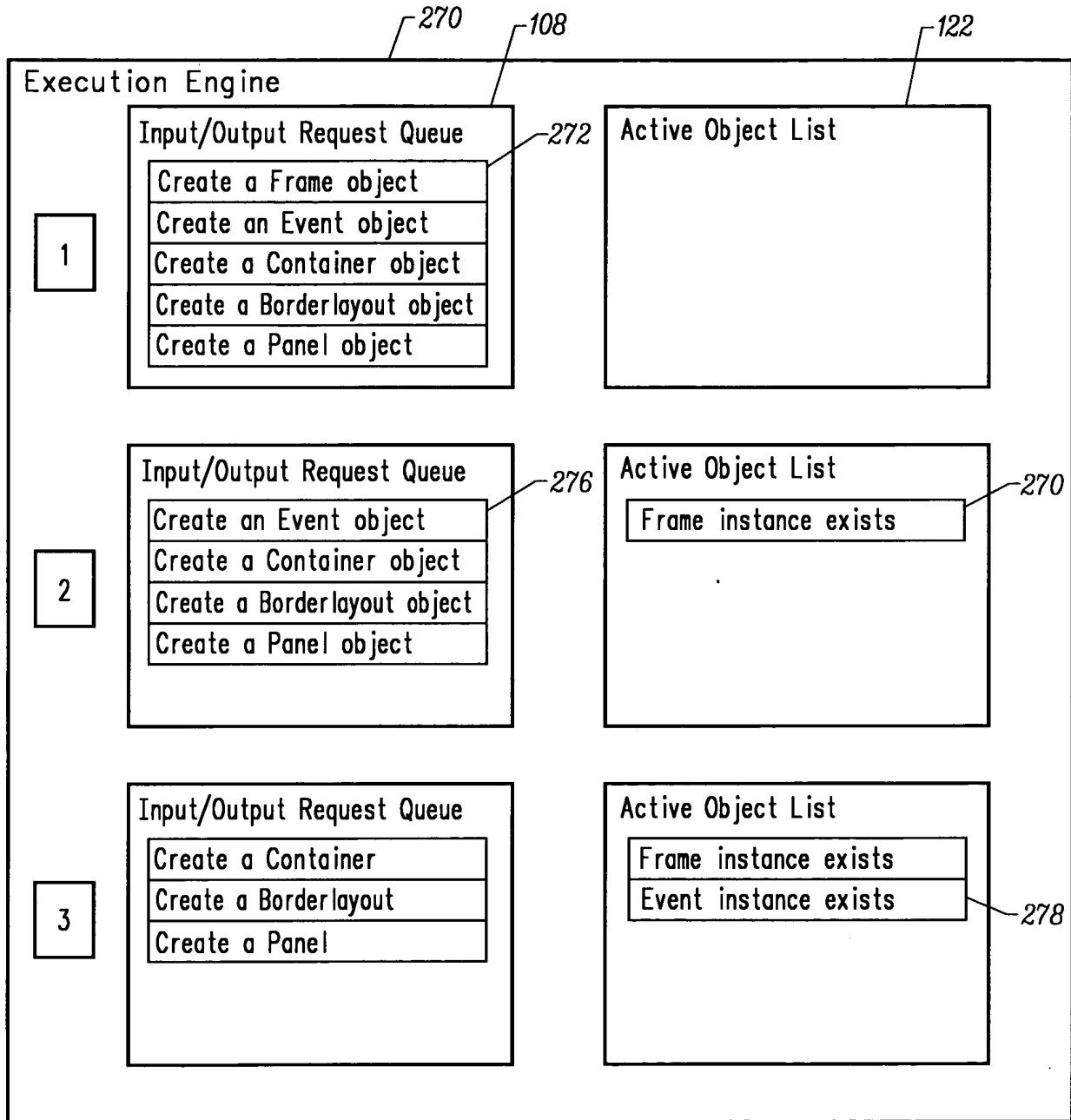


FIG. 16

## Windowing/View System

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### General Graphics Controller

- Creates Frames (i.e. windows)
- Creates Components (i.e. views)
- Passes image data to Image Renderer
- Passes text to Font Renderer
- Passes shapes to Polygon Renderer
- Allows selection (focus) for frames and components
- Deletes frames and components physically from display
- Traverses object hierarchy when a paint method in a view is called
- Handles mouse and keyboard events "passing" them down through a chain of frames and components

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### Window Manager

- Draws windows using polygon draws in the Polygon Renderer
- Manages windows so they can overlap
- Determines frames that event occurred in and notifies appropriate layout manager instance that it may need to update
- Oversees container hierarchies within each frame

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### Layout Manager (belongs to / is referenced by a frame)

- Manages container hierarchies within a frame's scope
- Determines container that event occurred in and tells it to update if necessary

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### Component Manager (belongs to/is referenced by a LayoutManager/Container)

- Manages component hierarchies within a container's scope
- Determines component that event occurred in and tells it to update if necessary

*FIG. 17*

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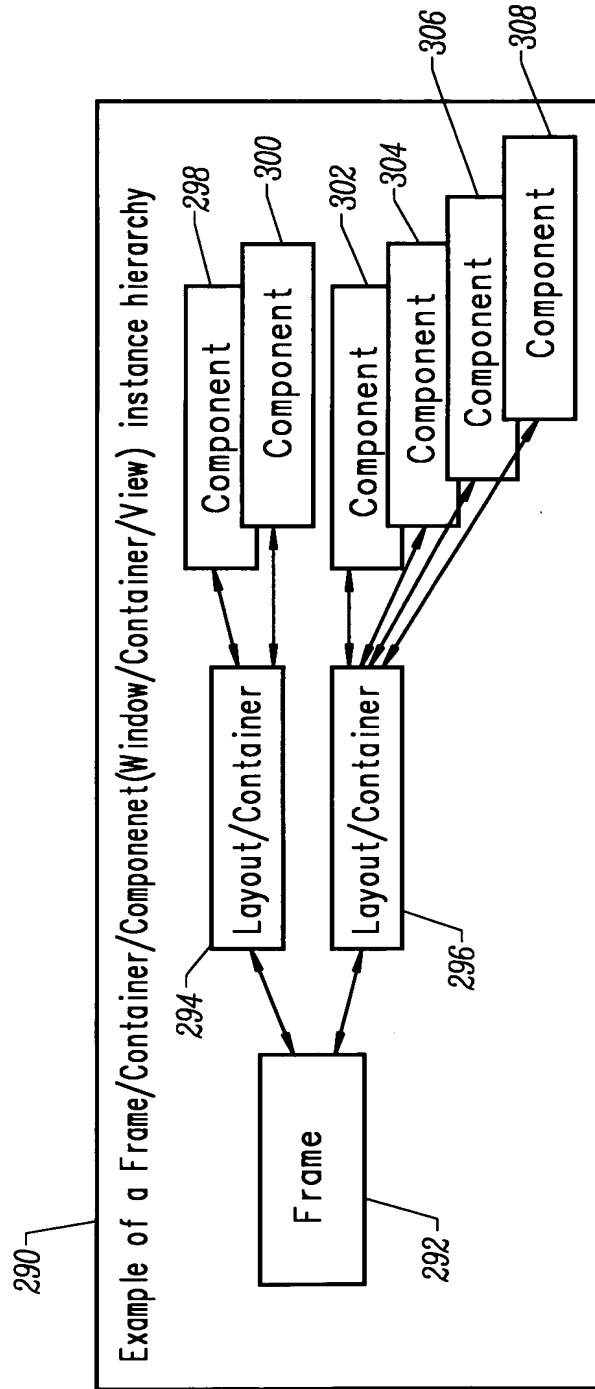


FIG. 18

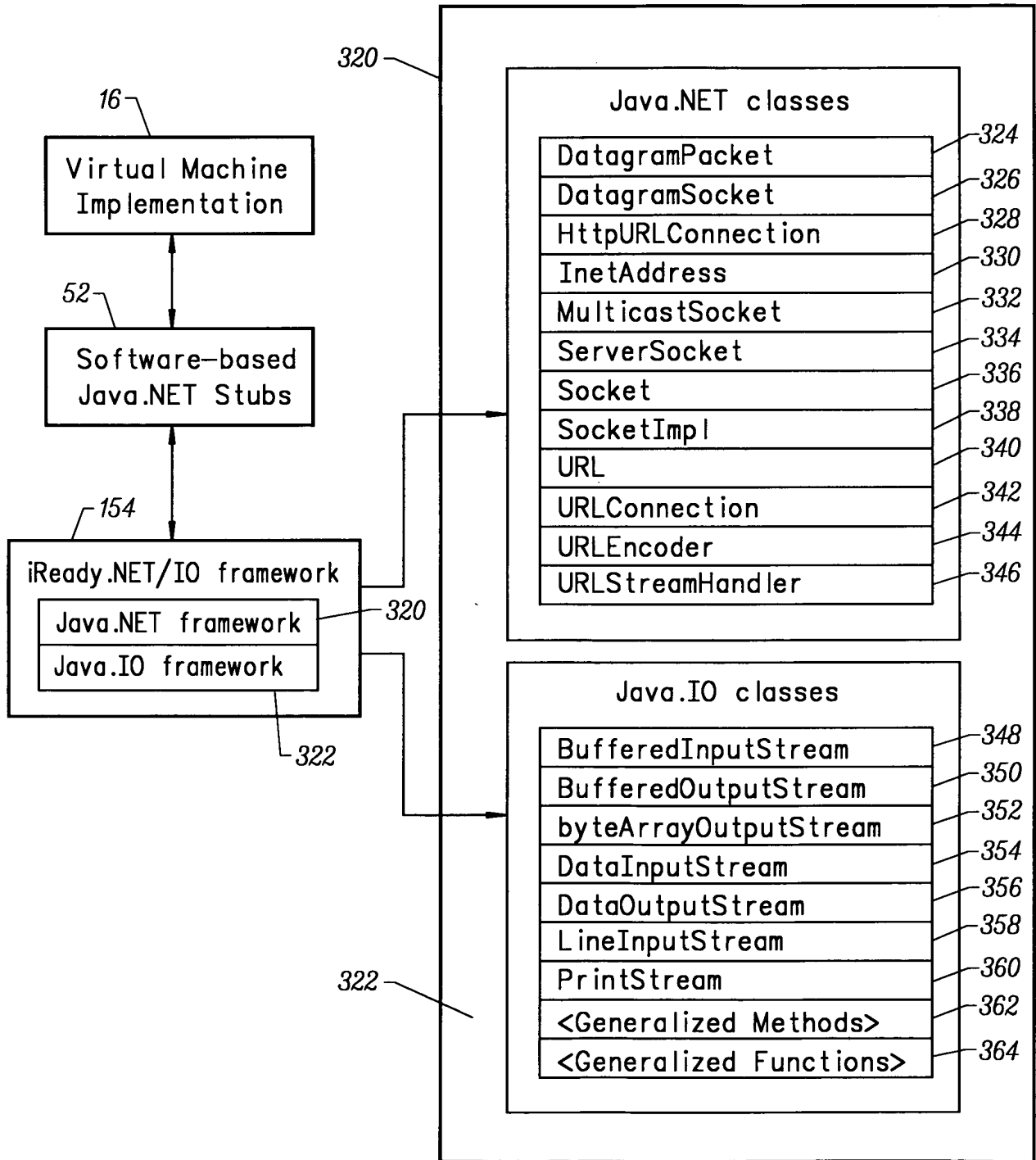


FIG. 19

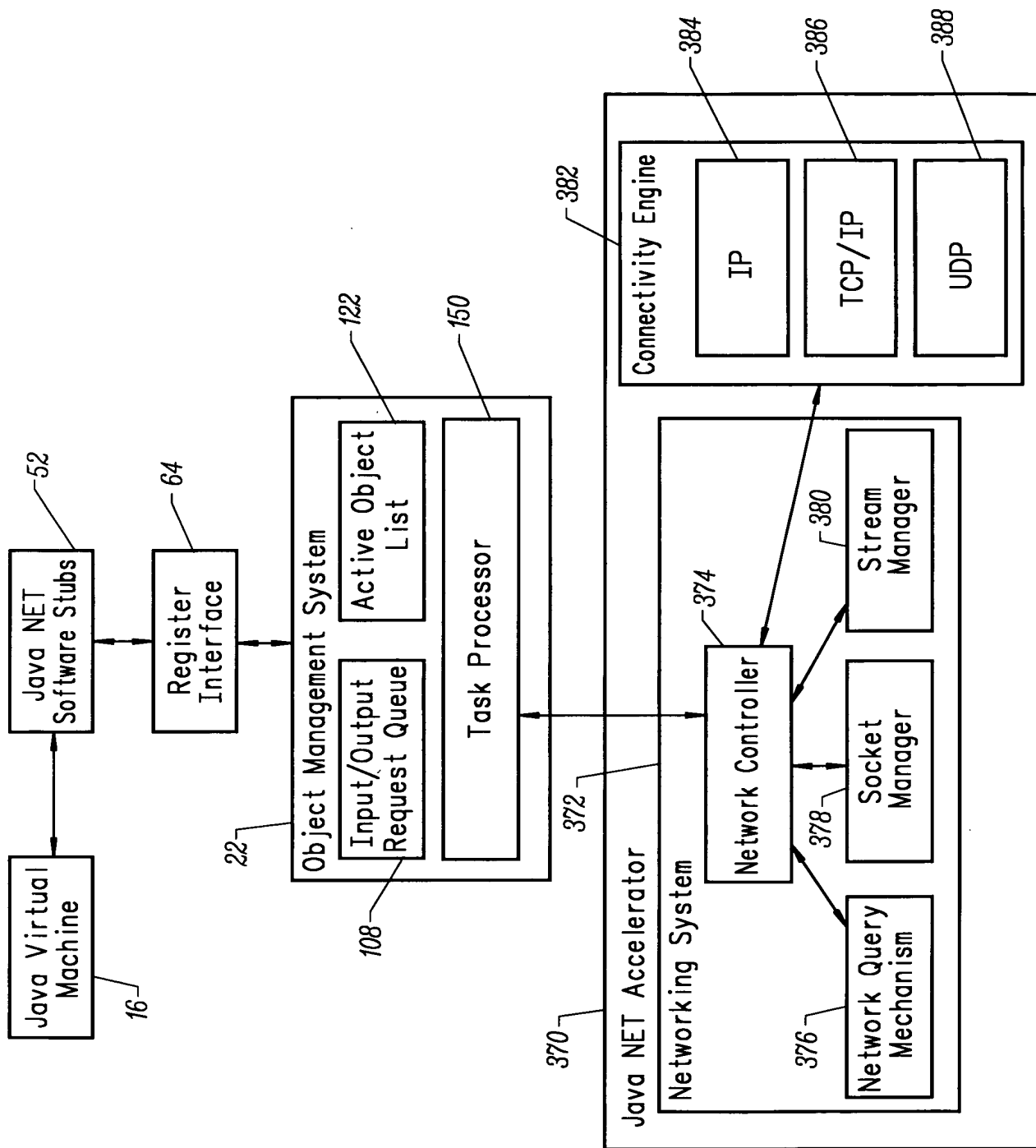


FIG. 20

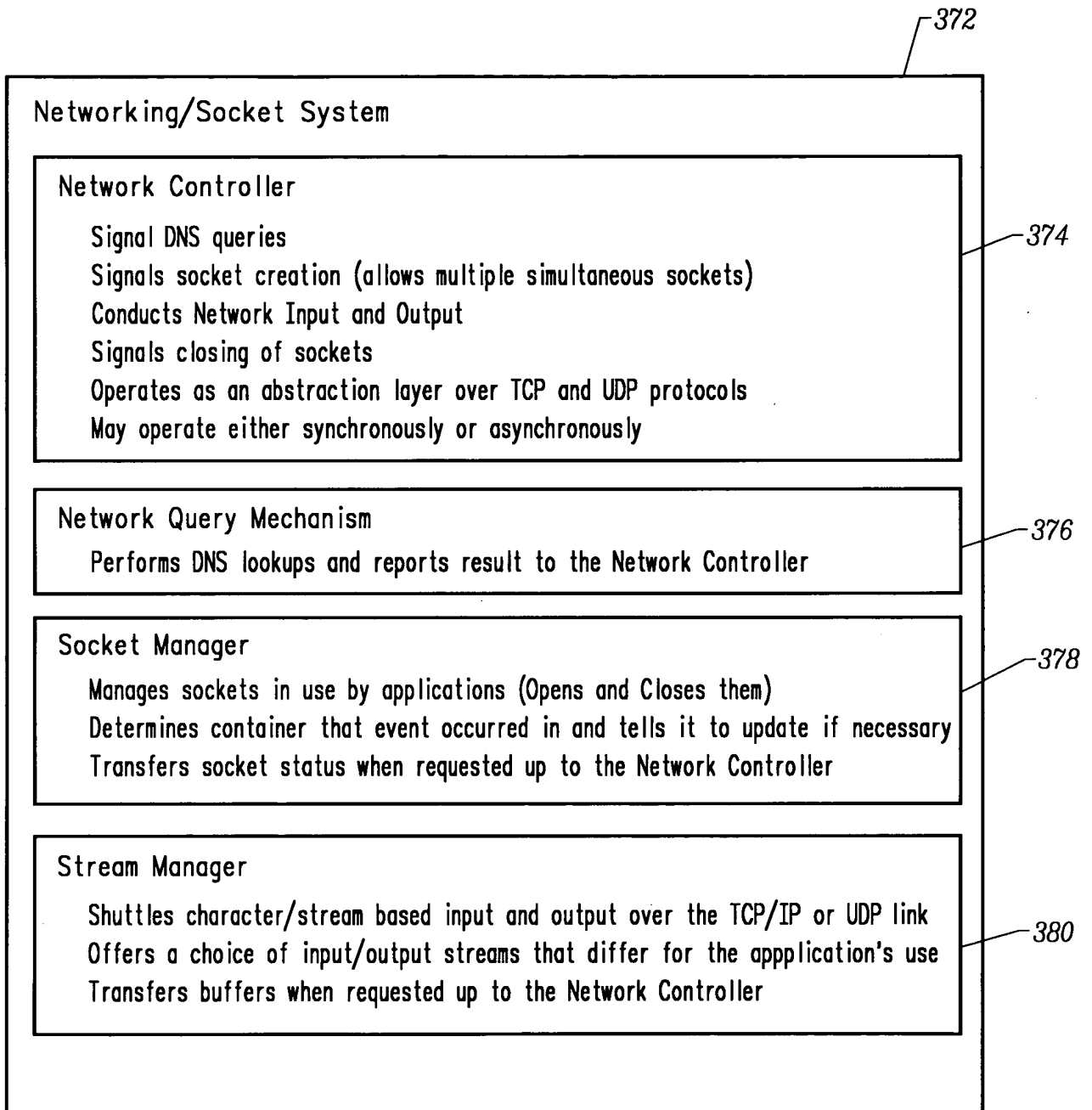


FIG. 21